WHAT IS CLAIMED IS:

1. A semiconductor photodetecting device comprising:

a photodetector formed on a semiconductor substrate; and

a tapered optical waveguide formed on the semiconductor substrate and including a tapered core layer which has a film thickness continuously increased toward the photodetector, and an upper clad layer which covers the upper surface and the side surface of the core layer and has a film thickness continuously decreased toward the photodetector.

2. A semiconductor photodetecting device comprising:

a photodetector formed on a semiconductor substrate;

a tapered optical waveguide formed on the semiconductor substrate and including a tapered core layer which has a film thickness continuously increased toward the photodetector, and an upper clad layer which covers the upper and the side surface of the core layer; and

a ridge-shaped optical waveguide formed on the semiconductor substrate between the photodetector and the tapered optical waveguide and including a core layer and an upper clad layer selectively covering only the upper surface of the core layer.

3. A semiconductor photodetecting device comprising:

a photodetector formed on a semiconductor substrate;

a tapered optical waveguide formed on the semiconductor substrate and including a tapered core layer which has a film thickness continuously increased toward the photodetector and an upper clad layer which covers the upper surface and the side surface of the core layer and has a film thickness continuously decreased toward the photodetector; and

a ridge-shaped optical waveguide formed on the semiconductor substrate between the photodetector and the tapered optical waveguide, and including a core layer and an upper clad layer selectively covering only the upper surface of the core layer.

4. A semiconductor photodetecting device according to claim 2, wherein

a width of the core layer of the ridge-shaped optical waveguide is larger than a width of the core layer of the tapered optical waveguide.

5. A semiconductor photodetecting device according to claim 2, wherein

a number of layers forming the tapered optical waveguide is different from a number of layers forming the ridge-shaped optical waveguide.

6. A semiconductor photodetecting device according to claim 2, further comprising:

a layer which is inserted in the upper clad layer of the ridge-shaped optical waveguide and having etching characteristics different from those of the upper clad layer of the ridge-shaped optical waveguide.

7. A semiconductor photodetecting device according to claim 1, wherein

the photodetector is directly connected to the core layer of the tapered optical waveguide or to the core layer of the ridge-shaped optical waveguide.

8. A semiconductor photodetecting device according to claim 1, wherein

the core layer of the tapered optical waveguide and/or the core layer of the ridge-shaped optical waveguide is divided in a plurality of layers by the clad layer.

9. A semiconductor photodetecting device according to claim 1, comprising

a plurality of the photodetectors optically coupled with each other by an optical waveguide.

10. A semiconductor photodetecting device according to claim 9, wherein

said plurality of photodetectors have longer light absorption layer as the photodetectors are farther from the tapered optical waveguide.

11. A semiconductor photodetecting device according to claim 9, wherein

widths of said plurality of photodetectors and a width of the optical waveguide are gradually wider as they are farther from the tapered optical waveguide.

12. A method for fabricating a semiconductor photodetecting device comprising the steps of:

forming a photodetector on a semiconductor substrate;

forming on the semiconductor substrate a tapered core layer whose film thickness is continuously increased toward the photodetector; and

forming an upper clad layer which covers the upper surface and the side surface of the core layer and has a film thickness continuously decreased toward the photodetector.

13. A method for fabricating a semiconductor photodetecting device comprising the steps of:

forming a photodetector on a semiconductor substrate in a first region;

forming on the semiconductor substrate a tapered core layer whose film thickness is continuously increased toward the photodetector;

forming a first upper clad layer on the core layer;

patterning the first upper clad layer and the core layer in a striped shape having one end connected to the photodetector; and

forming a first mask film for covering the first region and a second region adjacent to the first region;

etching the first upper clad layer with the first mask film as a mask to form a ridge-shaped optical waveguide including the core layer and the first upper clad layer in the second region; and

forming a second upper clad layer with the first mask film as a mask on the semiconductor substrate and the core layer to form a tapered optical waveguide including the core layer and the second upper clad layer in a third region adjacent to the second region.

14. A method for fabricating a semiconductor photodetecting device according to claim 13, wherein

in the step of forming the tapered optical waveguide, the second mask film is used to distribute growing rates of the second upper clad layer to thereby form the second upper clad layer with a film thickness thereof continuously decreased toward the photodetector.

15. A method for fabricating a semiconductor photodetecting device according to claim 13, wherein

in the step of patterning the first upper clad layer and the core layer, the core layer is patterned to have a

larger width in the second region than that in the third region.

16. A method for fabricating a semiconductor photodetecting device according to claim 13, wherein

in the step of forming the tapered optical waveguide and/or the step of forming the ridge-shaped optical waveguide, a number of layers forming the tapered optical waveguide and a number of layers forming the ridge-shaped optical waveguide are different from each other.

17. A method for fabricating a semiconductor photodetecting device according to claim 13, wherein

in the step of forming the first upper clad layer, a layer whose etching characteristics are different from those of the first upper clad layer is inserted in the first upper clad layer.

18. A method for fabricating a semiconductor photodetecting device according to claim 12, wherein

in the step of forming the core layer, the core layer divided in a plurality of layers by the clad layer is formed.

19. A method for fabricating a semiconductor photodetecting device according to claim 12, wherein

in the step of forming the photodetector, a plurality of the photodetectors are formed, optically interconnected by the optical waveguide.

20. A method for fabricating a semiconductor photodetecting device according to claim 19, wherein

in the step of forming the photodetector, a plurality of the photodetectors are formed to have a light absorption layer made longer as the photodetectors are farther away from the tapered optical waveguide.

21. A method for fabricating a semiconductor photodetecting device according to claim 19, wherein

in the step of forming the photodetector, a plurality of the photodetectors and the optical waveguide are formed so that the light absorption layer of the plurality of photodetectors and the optical waveguide have widths gradually increased as they are farther away from the tapered optical waveguide.